

The genus *Atanycolus* Foerster (Hymenoptera, Braconidae, Braconinae) in China, with description of one new species

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Abstract

The species of the genus *Atanycolus* Foerster (Hymenoptera, Braconidae, Braconinae) from China are revised and six species are recognized, including one new species (*A. grandis* Wang & Chen, **sp. n.**), which is described and illustrated in this paper. Three species, i.e. *A. crenulatus* Telenga, 1936, *A. lindemani* Tobias, 1980 and *A. sculpturatus* (Thomson, 1892), are reported from China for the first time. A key to species of this genus is provided.

Keywords

Hymenoptera, Braconidae, Braconinae, *Atanycolus*, new species, new record, Coleoptera, parasitoid, Palearctic region, Oriental region, China

Introduction

Atanycolus Foerster is a cosmopolitan genus with 59 described species (Yu et al. 2007). Most of species are less than 10.0 mm long. They are ectoparasitoids of the larvae of various species of wood and bark-boring beetles (Coleoptera: Buprestidae, Cerambycidae and Scolytidae), many of which are notorious pests of coniferous and broadleaved trees. The chemical control of these pests is difficult because they live under bark. Therefore, the species of this genus may be important natural control agents of many of these beetles.

This is a part of an on-going study of the subfamily Braconinae (Hymenoptera: Braconidae) of China (Wang et al. 2003a, b, c, d, 2004, 2006a, b, c, d, 2007, 2008). In this study, six species of genus *Atanycolus* were found to occur in China, of which one species is new to science (*A. grandis* sp. n.) and three species are new to China (*A. crenulatus* Telenga, 1936, *A. lindemani* Tobias, 1980 and *A. sculpturatus* (Thomson, 1892)). The new species is described and illustrated below. A key to the Chinese species of the genus is provided. The examined specimens are deposited in the Parasitic Hymenoptera Collection, Zhejiang University, Hangzhou, China (ZJUH), Institute of Plant Physiology and Ecology, the Chinese Academy of Sciences, Shanghai (SIPPE) and the Institute of Zoology, the Chinese Academy of Sciences, Beijing (IZBJ).

The morphological terminology used in this paper follows that of van Achterberg (1979), Harris (1979) and Quicke (1987). All descriptions and measurements were made under a Leica MZ 12.5 stereomicroscope (Wetzlar, Germany), and photos taken by a digital camera (Q-Imaging, Micropublisher 3.3 RTV) attached to a Leica MZ APO stereomicroscope (Wetzlar, Germany) using Synoptics Auto-Montage version 5.0 software.

Key to species of genus *Atanycolus* Foerster in China

1. Second metasomal suture (= groove between second and third metasomal tergites) wide and strongly crenulate; third tergite with strongly raised area antero-laterally **2**
 - Second metasomal suture narrow and weakly crenulate medially, and at least laterally smooth; third tergite with weakly raised area antero-laterally **5**
2. Head entirely blackish; longitudinal grooves of second metasomal tergite shallow laterally; first metasomal tergite blackish brown
 - ***A. denigrator* (Linnaeus, 1758)**
 - Head dark yellow or yellowish red; longitudinal grooves of second metasomal tergite deep laterally; first metasomal tergite black or yellow **3**
3. Triangular area of third and fourth metasomal tergites (except for medio-basally) uniformly sculptured; metasoma pale yellow and head blackish brown
 - ***A. sculpturatus* (Thomson, 1892)**
 - Third and fourth tergites smooth without any sculpture; metasoma yellowish brown or blackish brown and head reddish yellow **4**

- 4. Length of body more than 10 mm; ocellar triangular area with blackish spot (Fig. 2); wing membrane infuscated (Fig. 5); third metasomal tergite with strongly raised area antero-laterally (Fig. 7, 8)..... ***A. grandis* Wang & Chen, sp. n.**
- Length of body less than 10 mm; ocellar triangular area reddish yellow; wing membrane yellowish brown; third tergite with weakly raised area antero-laterally..... ***A. crenulatus* Telenga, 1936**
- 5. Second metasomal tergite with parallel longitudinal impressed grooves laterally, medio-basal smooth triangular area deeply impressed; suture between second and third tergites crenulate medially and smooth laterally; tergites three to six orangish yellow ***A. initiator* (Fabricius), 1793**
- Second tergite without parallel longitudinal impressed grooves laterally, medio-basal smooth triangular area without a deep impression; suture between second and third tergites completely smooth; tergites three to six yellowish-white..... ***A. lindemani* Tobias, 1980**

Descriptions

***Atanycolus grandis* Wang & Chen, sp. n.**

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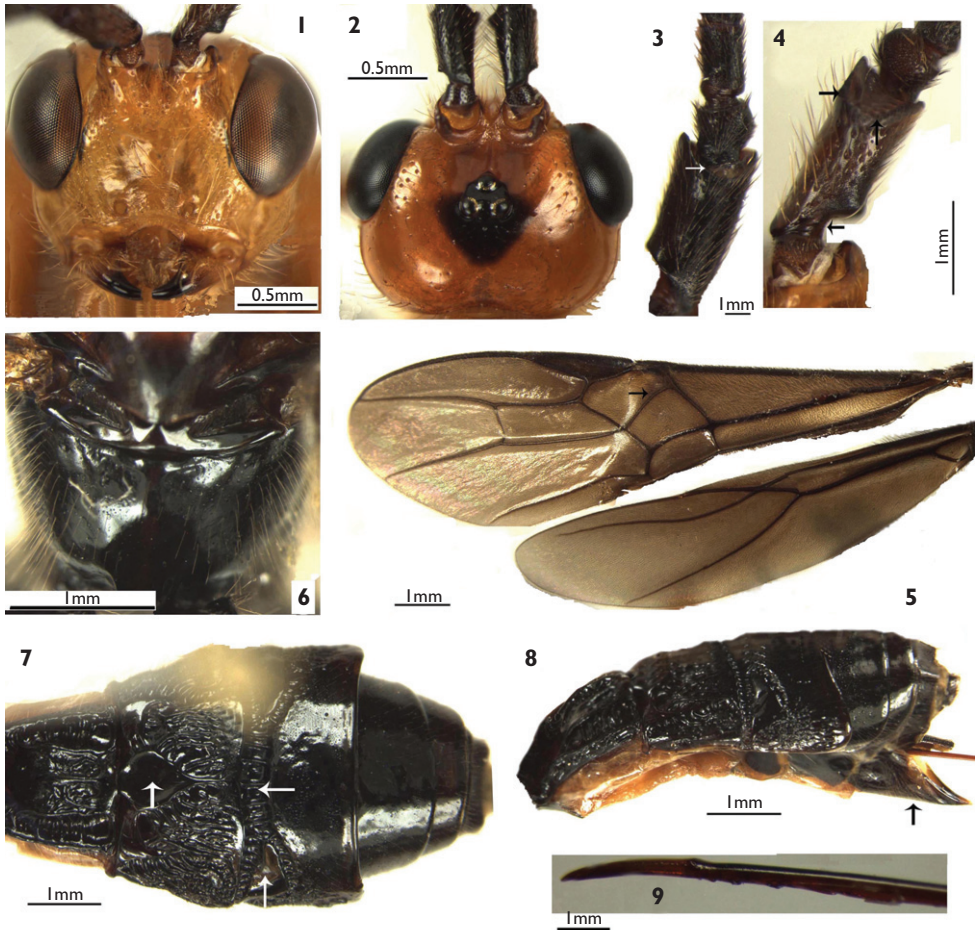
Figs 1–9

Length of body 10.0–14.0 mm, fore wing 8.0–12.0 mm, ovipositor sheath 10.0–12.5 mm.

Head. Antenna with 68 segments; terminal flagellomere tapering apically, approximately 1.4 times longer than basal width; first flagellomere parallel-sided but weakly flared basally, 1.2 and 1.5 times longer than the second and third ones, respectively; the latter 1.4 times longer than its maximum width; median flagellomeres as long as its maximum width; transverse medial clypeal carina with a row sparse long setae; height of clypeus: inter-tentorial distance: tentorio-ocellar distance = 5: 9: 6; face with sparse long setae, width of face: width of head: maximum length of eye in dorsal view = 18: 34: 19; frons strongly impressed medially; shortest distance between posterior ocelli: diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 2.5: 2.0: 9; vertex smooth and shiny with dense setae.

Mesosoma. Length of mesosoma 1.8 times as long as its maximum height, smooth and shiny with sparse long setae; notauli deeply impressed anteriorly and shallowly posteriorly, with sparse short setae along entire length; scutellar sulcus relatively narrow and deep, and distinctly crenulate; metanotum with strongly raised area medially; propodeum smooth, with sparse setae, but relatively densely and long setose laterally.

Wing. Length of fore wing veins SR1: 3-SR: r = 64: 45: 12; vein 1-SR+M slightly bent basally; length of fore wing veins 2-SR: 3-SR: r-m = 21: 45: 19; vein cu-a interstitial. Hind wing: length of veins SC+R1: 2-SC+R: 1r-m = 30: 6: 12; vein C+SC+R with three thickened (humular) bristles apically.



Figures 1–9. *Atanycolus grandis* Wang & Chen, sp. n.: **1** head, frontal view **2** head, dorsal view **3** scapus, lateral view **4** scapus, ventral-lateral view **5** wings **6** metanotum and propodeum, dorsal view **7** metasomal tergites, dorsal view **8** metasomal tergites, lateral view **9** apex of ovipositor, lateral view.

Leg. Length of fore femur: tibia: tarsus = 50: 53: 94; length of hind femur: tibia: basitarsus = 15: 25: 9, 3.2, 10.0 and 6.1 times their maximum width, respectively; tibia of hind leg with longitudinal groove medially.

Metasoma. First metasomal tergite 1.2 times longer than its maximum apical width, strong apical dorsal carinae occupying basal 3/4 of its length; second tergite with a glabrous medio-basal triangular area and sublateral longitudinal grooves, the remainder deeply striate; third tergite with distinct carina antero-laterally, smooth and shiny medially, distinctly sculptured postero-laterally; suture between second and third metasomal tergites wide, deep and crenulate; third tergite with transverse deeply impressed groove apically; tergites four to six smooth and shiny;

hypopygium acute apically, slightly extending beyond apex of metasoma; ovipositor sheath as long as fore wing, and ovipositor with ventral teeth sub-apically.

Colour. Antenna blackish; head dark yellow except for ocellar triangular area with blackish spot and maxillary palp reddish-yellow; mesosoma reddish-yellow but mesoscutum with blackish-brown spots laterally; propodeum dark brown; fore leg reddish-yellow, middle and hind legs blackish-brown; wings membrane infuscated and veins blackish brown; metasomal tergites black; ovipositor sheath blackish-brown.

Variation. Paratypes similar to the holotype. Antenna with 66–69 segments. Head in dorsal view 1.6–1.7 times as broad as long. Hind femur 3.1–3.3 times as long as broad medially. Pterostigma somewhat wide, 3.1–3.2 times as long as wide; second submarginal cell of fore wing long, vein 3-SR 2.2–2.3 times as long as the 2-SR. First tergite 1.1 times as long as broad posteriorly. Second tergite distinctly longer than third tergite. Vertex pale yellow or reddish yellow; mesoscutum with blackish brown spots laterally; middle and hind legs pale yellow; ovipositor sheath yellowish brown.

Specimens examined. Holotype, ♀, West Tianmu Mountain (119°23'E, 30°18'N), Zhejiang, 2000.VII.3, Ma Yun, No. 200103596 (ZJUH). Paratypes: 1♀, T'ienmu-Shan (119°23'E, 30°18'N), China, 1937.VII.2, O. Piel., Musee Heude (SIPPE); 1♀, T'ienmu-Shan (119°23'E, 30°18'N), China, 1936.VII.6, O. Piel., Musee Heude (SIPPE); 4♀♀, Songyang (119°29'E, 28°28'N), Zhejiang, China, 1989.VIII.16, He Jun-hua, 1989.VII.11–14, 11–21, No. 895251, 895313, 895448, 895251 (ZJUH); 2♀♀, Zhuchaoguan (119°30'E, 28°29'N), Songyang, Zhejiang, China, 1994.VII.17, Cai Ping, No. 944170, 944172 (ZJUH); 1♀, Zhuchaoguan (119°30'E, 28°29'N), Songyang, Zhejiang, China, 1994.VII.17, Xu Zai-fu, No. 944369 (ZJUH); 1♀, Baishanzu (119°14'E, 27°52'N), Qingyuan, Zhejiang, China, 1993.VII.30, Wu Hong, No. 945161 (ZJUH); 1♀, Wuyi Mountain (118°02'E, 27°46'N), Fujian, China, 1986.VI.16, Wang Jia-she, No. 870644 (ZJUH); 1♀, Huaping (110°2'E, 25°10'N), Longsheng, Guangxi, China, 1982. VI. 25, He Jun-hua, No. 823297 (ZJUH); 1♀, Longgang (108°23'E, 34°19'N), Longzhou, Guangxi, China, 1982.V.20, He Jun-hua, No. 821594 (ZJUH); 1♀, Ziping (114°16'E, 26°56'N), Jinggang mountain, Jiangxi, China, 1981.V.28, Liu Jin, Liu Yao, No. 340041551 (ZJUH); 1♀, Pingba (106°27'E, 26°42'N), Guizhou, China, 19??, Guizhou Forest Academy Institute, No. 801723 (ZJUH).

Biology. Unknown.

Etymology. From latin “grandis” meaning for large, referring to large body of type specimens.

Diagnosis. This species is similar to *Atanycolus crenulatus* Telenga, but can be separated from the latter by having the length of body more than 10 mm; the wings infuscated (Fig. 5); ocellar triangular area with a blackish spot (Fig. 2); vein 1-SR+M of fore wing slightly bent basally (Fig. 5); propodeum with relatively dense and long setae laterally (Fig. 6); second tergite deeply striate except for smooth medio-basal triangular area (Fig. 7), and third metasomal tergite with a distinctly raised area anterolaterally (Figs 7, 8).

***Atanycolus crenulatus* Telenga, 1936**

Atanycolus crenulatus Telenga, 1936: 327; Telenga, 1952: 120 (Trans. 1969: 95); Tobias, 1971, 54: 207; Tobias et al., 2000, 4: 183.

Specimens examined: CHINA: GANSU: 1♀, Lanzhou (103°44'E, 36°2'N), 1980. VII.29, Wang Chang-zhong, No. 853597 (ZJUH).

Biology. unknown.

Distribution. China (Gansu) and Russia.

Note. This species is new to China.

***Atanycolus denigrator* (Linnaeus, 1758)**

Ichneumon denigrator Linnaeus, 1758, 10a 1: 563.

Bracon denigrator: Panzer, 1801: 163.

Atanycolus denigrator: Foerster, 1862, 19: 238; Shenefelt, 1978: 1441; Papp, 1998: 147; Sheng, 1990, 12 (1): 56.

Biology. Reported from the following hosts: *Acanthocinus aedilis* L., *Rhagium indagator* F., *R. inquisitor* L., *Saperda populnea* L. and *Tetropium fuscum* L. (Coleoptera: Cerambycidae), *Anthaxia morio* F. and *Chrysobothris chrysostigma* L. (Coleoptera: Buprestidae).

Distribution. China (Inner Mongolia); Austria; Bulgaria; Croatia; Czechoslovakia; Finland; France; Germany; Greece; Hungary; Israel; Italy; Kazakhstan; Korea; Mongolia; Niger; Norway; Poland; Russia; Slovakia; Sweden; Switzerland; Turkey; United Kingdom.

Note. This species has been reported from Daxing'an Mountain (China) by Sheng (1990), but no specimens were available for our study.

***Atanycolus initiator* (Fabricius, 1793)**

Ichneumon initiator Fabricius, 1793, 2: 161.

Bracon (Coeloides) initiator: Blanchard, 1840, 3: 341.

Bracon (Vipio, Coelobracon) genalis Thomson, 1892, 17: 1800. syn. by Roman, 1912.

Atanycolus initiator: Szepliget, 1901, 33: 176; Watanabe, 1950, 21(2): 20 (Shanxi of China); Papp, 1998a, 59: 147; Tobias et al., 2000, 4: 183; Sheng, 1990, 1: 33.

Atanycolus mongolicus Telenga, 1936, 5 (2): 92. syn. by Tobias, 1971.

Atanycolus petiolaris Thomson, 1892, 17: 1859. syn. by Tobias, 1986.

Specimens examined. CHINA: HEILONGJIANG: 6♀♀, Dailing (128°54'E, 47°40'N), Yichun, 1956.VI.10, Shi Zhen-hua, No. 5710. 3, Ex. *Monochamus sutor* (L.); 20♀♀, Dailing (128°54'E, 47°40'N), Yichun, 1977.VII.24, He Jun-hua, No. 771811, 771749, 771771, 771786, 771845, 771870, 771680, 771703, 771713, 771710, 771850, 771802, 771887, 771892, 771812, 771687, 771725, 771813, 771726, 771727, 771903 (ZJUH); CHINA: INNER MONGOLIA: 3♀♀2♂♂, Xiao Xing'anling (127°42'E, 46°28'N), 1955.VI.1, Collector unknown, No. 5607. 1, Ex. *Ips typographus*, L. (ZJUH); CHINA: SHANXI: 1♀1♂, Taiyuan (112°33'E, 37°54'N), 1987.V, Zhao Rui-liang, No. 870074, 870075 (ZJUH); CHINA: SHANGDONG: 1♀, Tai mountain (117°59'E, 36°28'N), Tai'an, 1997.VI.17, Li Qiang, No. 200011169 (ZJUH); CHINA: HUBEI: 2♀♀, Jingshan (113°23'E, 31°6'N), 1980.VI, Zhan Zhong-cai, No. 824303, 824302 (ZJUH).

Biology. The known hosts are *Monochamus sutor* (L.) (Coleoptera: Cerambycidae) and *Ips typographus* L. (Coleoptera: Scolytidae) according to collecting labels. Other reported hosts are *Semanotus rufipennis* Motschulsky, *Acanthocinus aedilis* L., *Cerambyx scopolii* Fuessly, *Criocephalus rusticus* L., *Rhagium inquisitor* L., *Tetropium castaneum* L. and *T. fuscum* Fabricius (Coleoptera: Cerambycidae), *Aegeria flaviventris* Staudinger and *A. vespiformis* L. belonging to family Sesiidae of Lepidoptera based on the catalogues of Shenefeld (1978) and Yu et al. (2005).

Distribution. China (Heilongjiang, Inner Mongolia, Shanxi, Shandong, Henan and Hubei); Austria; Azerbaijan; Croatia; Czech Republic; Czechoslovakia; Finland; France; Germany; Hungary; Italy; Japan; Latvia; Lithuania; Mongolia; Norway; Poland; Russia; Slovakia; Spain; Sweden; Switzerland; Turkey; Turkmenistan; Ukraine; United Kingdom.

Atanycolus lindemani Tobias, 1980

Atanycolus lindemani Tobias, 1980, 7: 289–295; Tobias and Belokobylskij, 2000, 4: 184.

Specimens examined. CHINA: HEILONGJIANG: 1♂, Dailing (128°54'E, 47°40'N), Yichun, 1956.V.29, Shi Zhen-hua, No. 5710.1 (ZJUH); CHINA: HEILONGJIANG: 1♂, Dailing (128°54'E, 47°40'N), Yichun, 1977.VII.24, He Jun-hua, No. 771808 (ZJUH); CHINA: JILIN: 1♀, Gongzhu Mountain (124°49'E, 43°3'N), 1983.VIII.9, Wang Cheng-lun, No. 840129 (ZJUH); CHINA: XINJIANG: 1♀1♂, Shihezi (86°0'E, 44°18'N), 1981.VI.15, He Fu-de, No. 816488, Ex. *Scolytus seulensis* Murayama (ZJUH); CHINA: SHAANXI: 1♀1♂, Dingbian (107°59'E, 37°60'N), 1981.V.23, Dang Xin-de, No. 815987, Ex. *Xyloterinus politus* Say (ZJUH).

Biology. The known hosts are *Xyloterinus politus* Say and *Scolytus seulensis* Murayama (Coleoptera: Scolytidae) according to collecting labels.

Distribution. China (Heilongjiang, Jilin, Xinjiang and Shaanxi) and Russia.

Note. This species is new to China.

Atanycolus sculpturatus (Thomson, 1892)

Bracon (*Vipio*, *Coelobracon*) *sculpturatus* Thomson, 1892, 17: 1800.

Vipio (*Coelobracon*) *sculpturatus*: Kriechbaumer, 1898, 24: 246.

Coelobracon sculpturatus: Szepligeti, 1896, 19: 168.

Coeloides (*Atanycolus*) *sculpturatus*: Marshall, 1897, 5 bis: 118.

Vipio (*Atanycolus*) *sculpturatus*: Schmiedeknecht, 1897 1: 512.

Atanycolus sculpturatus: Dalla Torre, 1898, 4: 296; Papp, 1998b, 59: 147; Tobias et al., 2000, 4: 183.

Iphiaulax (*Atanycolus*) *sculpturatus*: Hellen, 1927, 56: 11.

Atanycolus signatus Szepligeti, 1901, 33: 176. syn. by Papp, 1960.

Coelobracon signatus: Fahringer, 1926, 1(2–3): 136.

Specimens examined. CHINA: XINJIANG: 1♀, Liudaowan (87°65'E, 43°74'N), 1982.VII.28, No. 860047, collector unknown; 1♀, Shihezi (86°00'E, 44°18'N), 1981.VIII.14, He Fu-de, No. 820018 (ZJUH).

Biology. According to Shenefelt (1978) Yu et al. (2007), the known hosts are *Chrysobothris sorieri* Lap. and *Agrilus biguttatus* F. (Coleoptera: Buprestidae), *Tetropium gabrieli* Weise, *Ruguloscolytus mediterraneus* Egg. and *Leptura rubra* (L.) (Coleoptera: Cerambycidae).

Distribution. China (Xinjiang); Austria; Croatia; Czech Republic; Czechoslovakia; Finland; France; Germany; Greece; Hungary; Italy; Japan; Russia; Slovakia; Switzerland; Ukraine.

Note. This species is new to China.

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